

ABSTRACT

Process for producing a tool insert for injection molding a microstructured part fabricated of a synthetic material, a metal or a ceramic material and which comprises an arrangement of microchannels and which further comprises an arrangement of through-going orifices extending in a substantially perpendicular manner with respect to the outer surface of the

5 part. The process comprises the following steps:

(1) microstructuring the front side of a first wafer by means of plasma etching to form the arrangement of microchannels, which are formed on the front side of the wafer,

(2) removing the etching mask from the front side of the first wafer,

(3) microstructuring the rear side of the first wafer by means of plasma etching to

10 form the arrangement of through-going orifices which extend in a substantially perpendicular manner with respect to the front side of the first wafer,

(4) removing the etching mask from the rear side of the first wafer,

(5) bonding the rear side of the first wafer to a carrier substrate to form a master,

(6) electrochemically depositing a metal layer on the front side of the first wafer and

15 in the through-going orifices which are present therein, wherein the deposited metal layer achieves a depth which is greater than the depth of the microchannels on the front side of the first wafer, and

(7) separating the metal layer from the master, wherein the separated metal layer can be used as a tool insert for injection molding a part and has integrated in the metal layer

20 piercing punches, each such punch having a shape and dimensions defined by the shape and dimensions of a corresponding one of the through-going orifices provided in the first wafer.